

**GENERAL SERVICES ADMINISTRATION**  
WASHINGTON, D. C. 20405

July 9, 1965

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**GSA BULLETIN FPMR NO. B-2**  
**ARCHIVES AND RECORDS**

**TO :** Heads of Federal Agencies

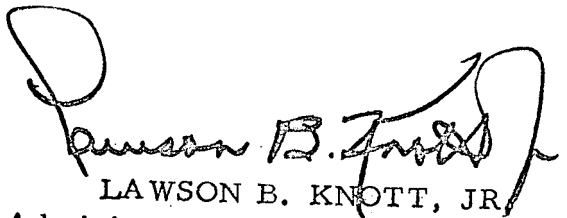
**SUBJECT:** Blemishes on negative microfilm

1. Purpose. This bulletin contains information to aid in preventing the possible loss of important data caused by blemishes on negative microfilm.
2. Background. Heads of Federal agencies were notified of the discovery of blemishes on processed microfilm negatives by General Services Administration Circular No. 326, January 21, 1964. Since that time, the National Bureau of Standards has conducted a study to determine the cause of these defects and to aid in establishing preventive measures. Their published report (Technical Note 261, Summary of Current Research on Archival Microfilm, April 16, 1965) offers guidelines to be followed in processing, handling, and storing of microfilm to prevent possible formation of blemishes. The National Bureau of Standards has not made final recommendations so GSA has not issued new microfilming standards.
3. Interim practice concerning the microfilming of permanent records. Until further notice, General Services Administration will not approve the disposal of records of permanent archival value based on the retention of a microfilm copy of the originals. Existing authority for disposal will not be rescinded, but it is suggested that agencies follow the recommendations in paragraph 4, below.
4. Suggested agency action. Pending the issuance of new microfilm standards, agencies are urged to have positive copies made of existing collections of negative microfilm appraised by the National Archives as having permanent value. Agencies should also consider making positive copies of existing collections of negative microfilm of vital

25 YEAR RE-REVIEW

records scheduled for long-term retention or indefinite storage. The making of positive copies of the negative microfilm should also be considered for current projects.

5. Expiration date. This bulletin expires June 30, 1966.

  
LAWSON B. KNOTT, JR.  
Administrator of General Services

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<b>Remarks:</b> <p>These are good comprehensive articles on NBS findings Re. "Blamishes." If you desire technical reports I could send you some. STATINTL</p> <p>STATINTL</p>			
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patible with international standards because of the differences in the system of measurement? and can we retain and promote U.S. standards internationally whether or not there is a change in our measurement system?

A series of national conferences will be held during the summer and fall of 1970, each investigating a specific major sector of the economy. The dates and topics of these conferences, all but one of which will be held in Washington, D.C., will be announced later. The exception, a week-long meeting sponsored jointly by NBS and the Engineering Foundation, will be held in mid-August at Deerfield, Mass. The 1971 timetable calls for analyzing the data and writing the report which will contain recommendations by the Secretary of Commerce on the best course of action for the U.S., and for presenting a report to Congress in August 1971, which NBS states will be made on schedule.

### ANSI STANDARD FOR THE ABBREVIATION OF PERIODICAL TITLES

The American National Standards Institute (ANSI) has published a joint ANSI - British Standards Institution Anglo-American standard for the abbreviation of periodical titles.

The recommendations of the standard are applicable to serial and many non-serial publications, including monographs and conference proceedings. They are intended to guide and assist authors, editors, librarians and others working in various areas of information transfer activity in preparing unique, unambiguous abbreviations within a specific frame of reference for the titles of publications cited in footnotes, references and bibliographies.

Copies of the standard, designated Z39.18 - 1969 are available from ANSI, 11 West 42nd Street, New York, N.Y. 10018, for \$10.00 per copy.

### CLR/ALA PLAN FOR PREPACKAGING OF CORE COLLEGE BOOK COLLECTION

The Council on Library Resources (CLR) and the American Library Association (ALA) have jointly announced plans for preparation of a catalog of core books for college libraries. This new list is expected to serve as the basis for a contemplated "package library program" in which college libraries could be provided with core collections that were preselected, acquired, processed, and delivered with a catalog so that books could be placed on the shelves immediately. The list is expected to contain some 40,000 titles and is to be available in 1971.

Selection of titles to be included in the list will be performed by the same reviewers who choose titles for review in CHOICE. Peter Doiron, editor of CHOICE, will supervise compilation of the titles with the help of a senior editor not yet appointed.

The project will be under the auspices of the Association of College and Research Libraries (ACRL) of ALA and will be funded by CLR. An Advisory Committee has been appointed by ACRL with Philip J. McNiff, Director of the Boston Public Library, as Chairman. Responsibility for preparation of the core catalog has been delegated to the ACRL by the ALA Publishing Board and Editorial Committee, with William Rutter, ALA's Associate Executive Director for Publishing Services, as Project Manager, and J. Donald Thomas, Executive Secretary of ACRL, providing liaison with the Advisory Committee.

### NBS FINDINGS ON PREVENTION OF MICROFILM BLEMISHES

A U.S. National Bureau of Standards (NBS) Institute for Basic Standards study reveals that gases evolved from paper and paper-lined storage cartons are responsible for the formation of blemishes on processed microfilm. Dis-

placement of image silver has been pinpointed to an oxidation reduction reaction caused by peroxide and other gases. The study, by C.S. McCamy and C.I. Pope of the NBS Institute for Basic Standards, has also indicated that simple precautionary measures may be taken to eliminate "redox" blemishing.

The formation of spots or blemishes on processed microfilm was cause for alarm among film manufacturers, archivists, Government agencies, etc. The extent of the concern is reflected by the number of agencies that sponsored the research to solve the problem: the National Archives and Records Service, the Library of Congress, the Social Security Administration, the Navy Bureau of Weapons, and the Adjutant General's Office of the Department of the Army. In addition, the National Microfilm Association solicited and secured financial support from the Bell and Howell Company, E. I. duPont de Nemours and Company, Dynacolor Corporation, IBM Corporation, Minnesota Mining and Manufacturing Company, Recordak Corporation, University Microfilms, and Xerox Corporation.

When it became apparent that blemish formation was a widespread problem, a field survey was conducted in which 100 trained inspectors examined over 7400 rolls of microfilm in different Government agencies. More than 370,000 observations were recorded and then statistically analyzed at NBS. Among the findings of the survey were: blemishes existed in 6 different types; blemish formation was more severe in humid storage areas; films stored in metal containers were practically blemish free; films stored in air-conditioned areas were less prone to blemish; and, when there were no leaders on the film rolls, blemish formation was 2 to 3 times as severe as when film rolls had leaders of approximately 1.5 meters. These factors tended to confirm the theory that products evolved from the paper storage cartons were responsible for blemish formation.

Results of the study have indicated several precautionary measures that may be taken to prevent blemish formation:

1. Use safety base permanent record film as specified in the ANSI (formerly USASI) specifications for photographic films for permanent records.
2. Use no higher densities than are required for the intended purposes and use dark characters on a light background if this is feasible.
3. Residual thiosulfate concentration should not exceed 1 microgram per square centimeter, but should be greater than zero. The optimum concentration appears to be about 0.5 microgram per square centimeter in a clear area.
4. Keep processing machinery and film clean.
5. Avoid scratching film.
6. Store films in containers made of inert materials, such as metals or plastics of proven quality. With good ventilation and clean air, the containers need not be sealed.
7. Do not permit storage temperature to exceed 70°F nor the relative humidity to exceed 40 percent.
8. Avoid wide-range cycling of temperature and humidity, since this accelerates the imbibition of gaseous contaminants.

#### LTP AND DAVI TO PROPOSE STANDARDS FOR AUDIOVISUAL EQUIPMENT

The Library Technology Program (LTP) of the American Library Association signed an agreement with the Department of Audiovisual Instruction (DAVI), an affiliate of the National Education Association, to jointly sponsor and finance the drafting of performance standards for audiovisual equipment. Standards will be sought for record players, tape recorders and playback units, 16mm motion picture sound projectors, and filmstrip and combination filmstrip/slide projectors.

*Review of Proposed USA Standard for Archival Film*

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Appendix C

Microscopic Blemishes

Some processed negative microfilms on cellulose ester base in storage for two to twenty years have developed microscopically small colored spots or blemishes. These spots were first discovered in 1961. The fogged leader at the outside of the roll is more frequently affected by the blemishes, which are generally red or yellow in color and are smaller in size than the image characters (for example, a typewritten cipher reduced 20X) on the microfilm. On occasion, these spots are observed further into the roll and appear in image areas. Evidence to date indicates that negative microfilms on polyester base are neither more nor less susceptible to microscopic blemishes than microfilms on cellulose ester base. A more detailed description of the blemishes and of the techniques used in inspecting microfilm is given in National Bureau of Standards Handbook 96.(14)

The spots are believed to be caused by the oxidation of the image silver and the migration of the silver ion to localized areas. The color may be due to colloidal silver.(10,15) Oxidizing agents which can cause image degradation are aerial oxygen, whose action on the film is strongly accelerated by moisture, and atmospheric contaminants, such as peroxides, ozone, sulfur dioxide, hydrogen sulfide, and nitrogen oxides, all occurring in industrial atmospheres. Peroxides may be present in some varieties of wood and may also be formed as the result of aging of paper inserts etc. and cardboard containers commonly used in storing film. The latter appear as a likely source of oxidants associated with blemish formation.

The conditions under which microfilm is processed have been found to play a role in the development of the blemishes when the film has been improperly stored in a humid atmosphere. Good processing techniques are essential so that the film emerges from the process free of water and chemical spots, dirt, dust, scratches, and other blemishes. Washing procedures should provide uniform removal of the thiosulfate and the associated silver compounds. Drying should be uniform and extremes of temperature should be avoided. A small quantity of potassium iodide in the fixing bath combined with proper storage conditions, has been found to provide some protection against these blemishes in microfilm.(11)

It must be emphasized that the conditions under which microfilm is stored play a vital role in the development of these defects. Storage in cool, dry air that is free of oxidizing gases or vapors is important. Storage in metal cans rather than with paper or in cardboard cartons, which produce peroxides with age, is recommended.

A protective gold treatment provides a high degree of protection against microscopic blemishes and may be applied either as a part of the photographic processing procedure or as a post-processing treatment.(12,13)

Appendix D

Emulsion Adhesion

One property of film on poly(ethylene terephthalate) base which requires consideration is that of the adhesion of the photographic and backing layers to this base. For some

films this is not quite as good in all respects or under all conditions as is the case with cellulose ester-type bases. The extreme chemical inertness of this new film base makes the problem of adhesion much more difficult. Of importance is the effect of very low relative humidities which cause the gelatin photographic and backing layers to contract and impose severe stresses on the gelatin adhesion. Cycling relative humidities from moderate to very low cause alternate expansion and contraction of the gelatin layers which can be particularly severe on the adhesive bond. The magnitude of this stress on the bond is very dependent on the thickness and physical characteristics of the gelatin layers which differ with each type of film.

Under extreme conditions of elevated temperature and low or cycling relative humidities, gelatin photographic layers and backing layers on polyester base sometimes develop adhesion defects, such as slight edge peeling, flaking, emulsion cracking, etc., while similar layers on cellulose ester base under the same conditions do not exhibit these defects or do so to a lesser degree. For this reason the relative humidity is extremely important for permanent record storage. The recommended environmental conditions for archival storage are temperatures less than 70 F and a relative humidity between 30 and 50% RH. It is essential that polyester base films for permanent records not only meet the requirements of this specification, but that they are stored under proper storage conditions. These are specified in pertinent USA standards.

REFERENCES

(These references are not a part of USA Standard Specification for Silver-Gelatin Type Photographic Films on Polyester Base for Archival Records, PH1.41-196x.)

- (1) Adelstein, P. Z. and McCrea, J. L. Permanence of Processed Estar Polyester Base Photographic Films. Photographic Science and Engineering, 9 (September, 1965), 305-313.
- (2) Anderson, D. H. and Woodall, N. B. Infrared Identification of Materials in the Fractional Milligram Range. Analytical Chemistry, 25 (December, 1953), 1906-1909.
- (3) Carr, D. S. and Harris, B. L. Solutions for Maintaining Constant Relative Humidity. Journal of Industrial Engineering Chemistry, 41, (September, 1949), 2014-2015.
- (4) Crabtree, J. I., Eaton, G. T., and Muehler, L. E. The Removal of Hypo and Silver Salts from Photographic Materials as Affected by the Composition of the Processing Solutions. Journal of the Society of Motion Picture Engineers, 41, (July, 1943), 9-68.
- (5) Crabtree, J. I. and Henn, R. W. Increasing the Washing Rate of Motion-Picture Films with Salt Solutions. Journal of the Society of Motion Picture and Television Engineers, 65, (July, 1956), 378-381.
- (6) Evans, G. H. Testing Aerial Photographic Negatives for Residual Sodium Thiosulfate. Photogrammetric Engineering, 8, (1942), 121-128.
- (7) Centa, J. M. Performance Characteristics of Cronar Polyester Photographic Film Base. Photogrammetric Engineering, 21 (September, 1955), 539-542.

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GENERAL SERVICES ADMINISTRATION



National Archives and Records Service  
Washington, D.C. 20408

January 3, 1969

REC'D 11/5 6 Jan 69  
IN REPLY REFER TO:

Mr. R. L. Bannerman  
Deputy Director for Support  
Central Intelligence Agency  
Washington, D.C. 20505

Dear Mr. Bannerman:

Thank you for your letter of December 16 asking about the status of the research program to determine the causes of microfilm blemishes.

Since our last progress report, the National Bureau of Standards has completed its research and prepared a preliminary report of findings and recommendations. On the basis of this report, the United States of America Standards Institute has drafted proposed standards for processing and storing archival microfilm so as to prevent the blemishes. We anticipate that USASI will publish the standards in about a year.

To enable agencies to undertake new microfilming programs, we are developing GSA standards for archival microfilm which will permit the disposal of permanent records. Unless legal or technical difficulties arise, the Federal Property Management Regulations concerning standards for archival microfilm should be available by March 1969.

If you need more information please contact Mr. Herbert E. Angel, Deputy Archivist of the United States, telephone code 13, extension 33435.

Sincerely,

*James B. Rhoads*

JAMES B. RHOADS  
Archivist of the United States

*Keep Freedom in Your Future With U.S. Savings Bonds*

16 Dec 1968

Mr. James B. Rhodes  
Archivist of the United States  
General Services Administration  
National Archives and Records Service  
Washington, D. C.

Dear Mr. Rhodes:

In 1964 the Central Intelligence Agency agreed, along with several other agencies, to transfer funds to the National Bureau of Standards to support a research program to determine the causes of blemishes on microfilm. Since that time your office has reported progress of the study on two occasions, in April and November 1965 but final conclusions had not been reached when those reports were prepared. We are currently considering alternative solutions to a critical storage problem and attempting to project our space requirements for records storage over the next several years. The feasibility of using negative microfilm instead of hard copy for long term and permanent storage may be a critical factor in our planning.

We would appreciate very much hearing the current status of the study and whether you expect to be able to reaffirm the current policy or establish a new policy to govern microfilming any time soon.

Sincerely,

/S/

R. L. Bannerman  
Deputy Director  
for Support

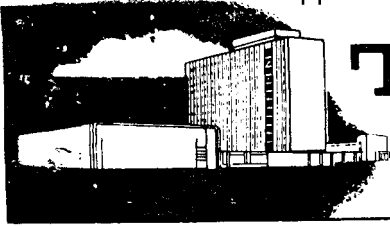
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# Technical News *from*

## U.S. DEPARTMENT OF COMMERCE • National Bureau of Standards

Washington, D.C. 20234.

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March 1970 - STR-3910

### CAUSE AND PREVENTION OF MICROFILM BLEMISHES

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<sup>1/</sup> McCamy, C.S., and Pope, C.I., Redox blemishes, their cause and prevention, presented at the National Microfilm Association Meeting held May 7, 1969, Boston, Mass.

- 2 -

Several years ago, there were reports of the formation of spots or blemishes on processed microfilm. As a great deal of information is stored on microfilm, this was cause for alarm among film manufacturers, archivists, Government agencies, and other records-keeping concerns. The extent of the concern is illustrated by the number of agencies that sponsored the research to solve the problem. These were the National Archives and Records Service, the Library of Congress, the Social Security Administration, the Navy Bureau of Weapons, and the Adjutant General's Office of the Department of the Army. In addition, the National Microfilm Association solicited and secured financial support from the Bell and Howell Company, E. I. DuPont de Nemours and Company, Dynacolor Corporation, International Business Machines, Minnesota Mining and Manufacturing Company, Recordak Corporation, University Microfilms, and Xerox Corporation.

When it became apparent that blemish formation was a widespread problem, a field survey<sup>2/</sup> was conducted in which 100 trained inspectors examined over 7400 roles of microfilm in different Government agencies. More than 370 000 observations were recorded and then statistically analyzed at NBS. Among the findings of the survey were:

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These factors tended to confirm the theory that products evolved from the paper storage cartons were responsible for blemish formation. Hydrogen peroxide is evolved as paper degrades and the rate of this reaction increases with the concentration of hydrogen peroxide. To simulate this natural storage condition in the laboratory, paper was immersed in a 5 percent hydrogen peroxide solution for thirty minutes, dried, and then sealed in jars with specimens of films at approximately 80 percent relative humidity. These films developed all the naturally occurring blemishes within 30 days.

While this apparently confirmed the theory of peroxide induced blemish formation, other observations were not explained. Studies elsewhere,<sup>3/</sup> for example, had revealed that films fixed in solutions containing small concentrations of iodide ions resisted blemish formation

<sup>3/</sup> Henn, R.E., Wiest, D.G., and Mack, B.D., Microscopic spots in processed microfilm: the effects of iodide, Phot. Sci. Eng. 9, 121 (1965).

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Further laboratory work was undertaken, which revealed that formaldehyde and formic acid were also evolved from the paper cartons. This work emphasized the fact that the susceptibility of films to blemish formation in the presence of peroxide is conditioned by other factors.

The silver grain, as formed in the gelatin matrix during development, is inherently unstable. In the normal photographic process, silver filaments become coated with sulfur atoms during fixation. It is this coating that stabilizes the grain structure. Films fixed a relatively long time and films retaining a small amount of hypo after washing acquire more sulfur and have been found to be quite resistant to blemish formation when they are exposed to peroxides, even at high humidity.

It was also found that when silver is oxidized and reduced in the presence of chloride ions, the reduced silver becomes incorporated with silver chloride in a colloidal form. Laboratory demonstrations have shown that a reddish colored colloidal silver is formed by the reaction of hydrogen peroxide with pure metallic silver in the presence of a small concentration of chloride ions. The characteristic color of the blemishes has been attributed to the presence of this colloidal material.

- 5 -

This suggested an investigation into the effects of chlorine in the wash water on film stability. It was found that films washed in distilled water were faded by peroxide attack but typical blemishes did not form. A small concentration of chlorine, therefore, appears to be essential for formation of typical blemishes.

The study also revealed that the incidence of spots increased with the optical density of the image. In one experiment, a step tablet exposed to peroxide-treated paper developed blemishes on all steps having densities of 0.58 or more; none, however, formed at densities of 0.43 or less. The incidence of blemish formation also increased for each step above 0.58.

While the differences in blemishing on various brands of film were not significant, the processing equipment was found to be an important factor. In fact, the formation of blemishes on film processed by a particular machine so out-weighed the other statistics in the survey that it became necessary to run a second analysis without these data. Fortunately, this type of machine is no longer on the market.

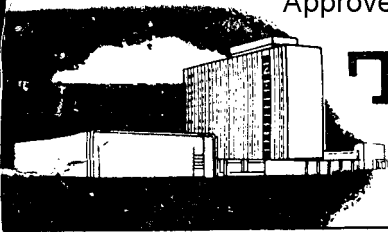
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4 January 1971

DDS MICROFILM SURVEY

1. Seven reports were received from the DDS Offices.
2. The last report was received on 10 December 1970.
3. A survey was made on all records received in the Records Center from Agency Organizational Elements for FY 1969, 1970, and to 19 October 1970.
4. The following was found:
  - a. 14,205 cubic feet of records, housed in office space, were identified by the offices for review and for the possibility of microfilming.
  - b. 13,200 cubic feet of records stored in the Records Center were identified by offices for review for microfilming possibilities.
  - c. 1,340 cubic feet of records are normally transferred from office space to the Records Center each year. This group of records must be evaluated along with the office holding and also those in the Records Center.
5. I have talked to [ ] regarding the Survey.
6. Mr. [ ] and I reviewed the Survey Sheets.
7. Mr. [ ] suggested that I followup on the office of Communications microfilm program. On 18 December 1970, I met with [ ] and John [ ] for a briefing and the developments in Commo. I then met with [ ] at her office. She explained briefly that she would like to microfilm everything feasible in the Office of Communications. She has ideas of what she would like to microfilm. Virginia also has been seeing vendors regarding the various types of microfilming equipment. She

SECRET

25X1

had Mr. [ ] of CRS to put on an exhibit of microfilm equipment for the personnel of the Office of Communications. Virginia is anxious to get microfilm going in Commo, and would like to be used as pilot installation. She feels the biggest item is getting money. There are questions of who would do the microfilming photography, etc.

25X1

8. I met with [ ] and we reviewed the DDS microfilm survey forms. [ ] seemed impressed by the volume we received to be reviewed for microfilming possibilities. [ ] is ready to go to the offices with me.

25X1

25X1

9. On 23 December 1970, I met with [ ] and reviewed the survey sheets for OTR.

25X1

25X1

a. We met with [ ] OTR/AIB, regarding the micro-filming of the course roster. She likes the idea of filming the course roster so that her shop will have the information at hand. She feels if furnished the camera and training her office could do the filming "in house". Of course, this must be checked out with

25X1

25X1

[ ]  
In addition, [ ] would like for the machine run of the Language Qualification Register (LQR) to be put on film. This comes from the Office of Personnel, and it would be a COM application. It is produced semi-annually.

25X1

We have an understanding that we will have another meeting, at which time [ ] will be with us for his views, advice, and what support we can get from PSD.

25X1

25X1

b. [ ] and I met with [ ] of the Career Training Program and discussed her Career Training individual case

25X1

files. She and [ ] the Chief of CTP, want to film the files. Hazel feels they will be able to do the filming in their office after receiving the necessary training. She will check this out with [ ].

25X1

25X1

Here again, [ ] and I will meet with Mr. [ ] [ ] can see and evaluate the records.

25X1

25X1

Hopefully, we can get started very early on the project.

Will call for an appointment after 13 January.

25X1

[ ] would like to get machine run 180A which she receives from Office of Personnel [ ] on microfilm.

25X1

*Over*



*SECRET*  
STATINTL

16 July 1970

Mr.

For Information only:

Neither SSS nor the Agency is involved.

The USIA in Tokyo is seriously entertaining a proposal from National Cash Register (NCR) to put Government Documents on Microfiche for sale by NCR in Japan.

I find this paper sufficiently informative to warrant a quick reading, but the plan is quite vague as to specifics of size fiche and volumes or the system. Pages 9 and 10 cite a few other noteworthy projects as background.

The operation by NCR will be similar to the Defense Documentation Center (DDC) which sells microfiche of classified reports and by the Department of Commerce "Clearinghouse" for unclassified publications.

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Attachment:

STATINTL

MICROFILM SURVEY ORGANIZATION UNIT REPORT					DATE					
NAME OF ORGANIZATION UNIT			NAME OF PERSON TO CONTACT							
			TITLE							
			ROOM NO.	BUILDING	TELEPHONE					
INDICATE WHETHER THE PREPARATION OF RECORDS FOR MICROFILMING, THE REPRODUCTION OF FACSIMILES FROM EXISTING MICROFILM OR THE MICROFILMING OF RECORDS WERE CARRIED ON DURING FISCAL YEAR 1954. <div style="text-align: center;"> <input type="checkbox"/> YES    <input type="checkbox"/> NO         </div> <div style="text-align: center;"> <u>IF YES, COMPLETE SCHEDULES "A" AND "B"</u> </div>										
<b>SCHEDULE A - MICROFILM OPERATIONS</b>										
<b>INSTRUCTIONS:</b> Insert in column A title (or brief description of file) of each group of records microfilmed during fiscal year 1954. Include sizes of records. Insert in column B number of images for each group described in column A. Insert in column C number of 16MM and 35MM film rolls for each group of records listed in column A. Show in column D by whom records were filmed. Use following code: 1 = Reporting organization unit. 2 = LO/P&RD. 3 = Elsewhere within Agency. In column E, if records were filmed by reporting organization unit, show by whom film was developed. Make no entry if filming operations were accomplished by other than reporting organization unit. Use following code: 1 = Reporting organization unit. 2 = LO/P&RD. 3 = Elsewhere within Agency. In column F show general purposes for which records were microfilmed. Use following code: 1 = Disposal (To reduce cost of space or file equipment requirements.) 2 = Vital Materials program. 3 = Preservation of Deteriorating records. 4 = To produce film or paper copies. 5 = To reduce time or labor of current office operations. Explain briefly on separate sheet and attach to schedule. 6 = To quickly copy borrowed records. 7 = Other. Describe on separate sheet and attach to schedule. If used for more than one purpose, list codes in order of relative importance, with most important listed first. In column G show how long paper record should be retained. In column H check YES or NO whether paper records were destroyed after filming.										
A	B	C		D	E		F	G	H	
DESCRIPTION OF RECORDS	NUMBER OF IMAGES	NUMBER OF ROLLS (100 ft.)		FILMED BY	FILM DEVELOPED BY		PURPOSE	PROPOSED RETENTION PERIOD FOR PAPER RECORDS	PAPER RECORDS DESTROYED	
		16MM	35MM		NEG	DUP			YES	NO

SEE SCHEDULE "B" ON REVERSE SIDE



*In item 3 show number of paper prints made or purchases during fiscal year 1954.*

2. DUPLICATE REELS PRODUCED FROM NEGATIVE

	3. NUMBER OF PAPER PRINTS
--	---------------------------

☐ YES    ☐ NO

### SCHEDULE C - EQUIPMENT INVENTORY

### SCHEDULE C - EQUIPMENT INVENTORY

In columns B, C, D, & E list on separate line each type, make, model and serial number of microfilm camera, automatic feeder, enlarger and automatic film-processing and film-printing equipment and readers used in filming and inspection processes.

A	B	C	D	E	F
---	---	---	---	---	---

DESCRIPTION	TYPE	MAKE	MODEL NUMBER	SERIAL NUMBER	COST	
					PURCHASE	MONTHLY RENTAL